

Integrated Stakeholder Coalition for Workforce Development

March 31, 2005
Huntsville, AL

"The United States still leads the world in research and discovery, but our advantage is rapidly eroding, and our global competitors may soon overtake us."

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

In 2000, Asian universities accounted for almost 1.2 million of the world's science and engineering degrees. European universities accounted for about 850,000. North American universities accounted for only about 500,000 degrees.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

In 2000, about 89,000 of the approximately 114,000 doctoral degrees earned worldwide in science and engineering were earned outside the United States.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

From 1994 to 2001, graduate science and engineering enrollment in the United States declined by 10 percent for U.S. citizens but increased by 25 percent for foreign-born students.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

In 2001, approximately 57 percent of all postdoctoral science and engineering positions at U.S. universities were held by foreign-born scholars.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

Since 1980, the number of science and engineering positions in the United States has grown at almost five times the rate of the U.S. civilian workforce as a whole; however, the number of U.S. citizens earning degrees to fill these positions is growing at a much smaller rate.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

There are rapidly increasing retirements from the science and engineering field, leading to a potential shortage in the labor market. More than half of those in the workforce with science and engineering degrees are 40 or older.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

Between 1993 and 1997, the Organisation for Economic Development countries increased their number of science and engineering research jobs by 28 percent, almost twice the increase in the United States.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

The U.S. share of science and engineering papers published worldwide declined from 38 percent in 1988 to 31 percent in 2001.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

From 1998 to 2001 the U.S. increased its number of science and engineering articles by only 13 percent. The countries of East Asia, including China, Singapore, Taiwan, and South Korea, increased by 492 percent.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

From 1989 to 2001, patent applications from the U.S. grew by 116 percent. U.S. patent applications from China, India, Singapore, South Korea, and Taiwan grew by 759 percent.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

Collectively, the world's fastest growing economies of China, Ireland, Israel, Singapore, South Korea, and Taiwan are on track to catch up to U.S. R&D investment.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

U.S. federal funding of basic research in engineering and physical sciences has experienced little to no growth over the last 30 years and as a percentage of GDP has dropped from near 90 percent to below 50 percent.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

From 1980 to 2001, the U.S. share of worldwide high-tech exports fell from 31 percent to 18 percent while the global share for China, South Korea, and other Asian countries increased from 7 percent to 25 percent.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

China now rivals the United States as a destination for foreign capital and in 2003 was the largest recipient of foreign direct investment in the world. Investment in U.S. businesses dropped from \$314 billion in 2000 to \$30 billion in 2003, while China took in more than \$53 billion.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

While U.S. high-tech output doubled from \$423 billion to \$940 billion between 1989 to 2001, China's high-tech output grew more than 8-fold, from \$30 billion to \$257 billion.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

Asian countries are investing significantly in nanotechnology and may have already surpassed the United States in this area of research. China already leads the United States in several key areas.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

The United States ranks 13th out of 15 highly developed countries in household broadband penetration.

Taskforce on the Future of American Innovation,
Benchmarks of Our Innovation Future, February 2005

Retention is a serious problem among math and science teachers; this problem will become more critical as baby boomer teachers near retirement age.

Learning for the Future, Changing the Culture of Math and Science Education to Ensure a Competitive Workforce, A Statement by the Research and Policy Committee for Economic Development, 2003

Both the private and public sector will face problems if the pipeline for scientists and engineers is not widened.

Learning for the Future, Changing the Culture of Math and Science Education to Ensure a Competitive Workforce, A Statement by the Research and Policy Committee for Economic Development, 2003

The private sector employs three-quarters
of the professional technical workforce
and will drive the expansion of the
economy.

Learning for the Future, Changing the Culture of Math and Science
Education to Ensure a Competitive Workforce, A Statement by the
Research and Policy Committee for Economic Development, 2003

The public sector will need to replace retiring scientists and engineers, while being constrained by the fact that many public sector jobs must be held by American citizens.

Learning for the Future, Changing the Culture of Math and Science Education to Ensure a Competitive Workforce, A Statement by the Research and Policy Committee for Economic Development, 2003

Foreign workers are not a long-term solution to labor market shortages. As other economies continue to develop, they will be better able to retain talented young people who have studied in the United States.

Learning for the Future, Changing the Culture of Math and Science Education to Ensure a Competitive Workforce, A Statement by the Research and Policy Committee for Economic Development, 2003

In 2000 only 20 percent of 12th graders reached a score of “proficient” in the National Assessment of Educational Progress. Science scores revealed similar lackluster patterns.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

Nationally, 22 percent of all college freshmen fail to meet the performance levels required for entry-level mathematics and must begin their college experience in remedial courses.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

Of students entering college with plans to major in science or engineering, less than 40 percent graduate with a degree in that field within six years.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

Three-quarters of all undergraduates in China earn degrees in mathematics, science, and engineering fields, compared to only about one-third of American students.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

Nearly half the students who completed doctoral degrees in engineering in the United States in 2001 were foreign, as were more than 40 percent of doctoral graduates in mathematics and computer science.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

According to U.S. Dept. of Labor predictions, jobs requiring science, engineering, and technical training will increase by 51 percent by 2008, four times faster than overall job growth.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005

Between 260,000 and 290,000 new math and science teachers will be needed in the 2008-2009 school year for secondary schools alone. In 1999-2000, nearly 50,000 more teachers left the profession than entered it.

A Commitment to America's Future: Responding to the Crisis in Mathematics & Science Education, Business-Higher Education Forum, 2005